Myopia-aphakia
I. Prevalence of retinal detachment

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The incidence of retinal detachment after intra-
capsular extraction of senile cataract is reported in
this paper in a consecutive series of 136 eyes with
high myopia, with particular reference to the age of
the patient and the interval between lens extraction
and the appearance of retinal detachment.

We could find only two similar studies in the
literature (Morax and Aron, 1961; Dienstbier,
1962); and two other studies which may have been
influenced by the performance of prophylactic
treatment in some of the cases (Barraquer, 1958;
Triester, 1972).

Material and methods
From January 1966 to December 1972, 136 intracapsular
cataract extractions were performed in our department
on eyes with axial myopia of -6·0 dioptries or more.
The refraction was calculated according to the formula:
Phakic correction = (aphakic correction — 11) × 2,
(Borish, 1970). There were 39 men and 61 women.
In every case the operation was performed under local
anaesthesia using a limbus-based flap, 5-7 preplaced
sutures and a-chymotrypsin; the patient was allowed
out of bed the day after the operation. Vitreous loss
occurred in six eyes. In no case was any treatment
designed to prevent retinal detachment performed
before cataract extraction. Photocoagulation of asympto-
tic retinal breaks discovered after cataract extraction
was performed on two eyes which had suffered
vitreous loss.

The incidence of retinal detachment was assessed by
examining the hospital records of all cases of retinal
detachment seen until June 1974. In addition, the
national register of cases of retinal detachment (Michael-
son and Stein, 1972) was examined to make sure that
no case had developed retinal detachment without our
knowledge, or had been treated preventively in another
department, but there was no such case. The follow-up
therefore extended over a period of 14—94 years and was
complete. One case in which retinal detachment was
probably present before cataract extraction was not included.

Results
Retinal detachment occurred in nine of the 136
eyes (6·7 per cent).

Table I shows, according to age, the number of
eyes with cataract and the number of eyes which
developed retinal detachment. More than half the
eyes with cataract, but only two of the nine eyes
with retinal detachment, were of patients over
the age of 60 years: these two eyes were of patients aged
61 and 62 years.

Data concerning the nine eyes which developed
retinal detachment are shown in Table II. There
were five men and four women. Bilateral detach-
ment occurred in two patients. Vitreous loss had
occurred in two eyes. Retinal breaks without
detachment were found in three of the four rem-
aining eyes in which vitreous had been lost,
(see page 483). Apart from a small hyphaema into
one eye, the postoperative course was uneventful
in all cases. In Case 3 there was direct trauma to
the eye, from a plastic ball, immediately before the
occurrence of the detachment. The interval be-
tween cataract extraction and the occurrence of
retinal detachment was 1 week to 3 months in
cases, 1 year in two cases, and more than 1
year in two cases.

Discussion
In the present study, retinal detachment occurred
after intracapsular cataract extraction in nine out

<table>
<thead>
<tr>
<th>Age at time of lens extraction (years)</th>
<th>No. of eyes</th>
<th>With cataract</th>
<th>With detachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>40—50</td>
<td>17</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>51—60</td>
<td>44</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>61—70</td>
<td>36</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>&gt; 70</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>136</td>
<td>9 (6·7 per cent)</td>
<td></td>
</tr>
</tbody>
</table>

*Age 62 and 63 years
of 136 eyes with myopia of -6·0 dioptres or more (6·7 per cent). Other authors have reported an incidence of 6·2 to 8·1 per cent (Morax and Aron, 1961; Dienstbier, 1962; Triester, 1972), see Table III. Barraquer (1958) found that retinal detachment occurred in 1·3 per cent of eyes with all degrees of myopia after lens extraction, but prophylactic surgery in the form of lamellar scleral resection was performed in one-third of the eyes in this series. There was also some selection of cases in Triester's series, which was the 'control group' used for comparison with 164 eyes treated by prophylactic diathermy before cataract extraction: indications for treatment were the presence of areas of retinal degeneration and a history of retinal detachment in the other eye.

The overall incidence of retinal detachment after cataract extraction of 0·4 to 3·5 per cent reported by various authors (reviewed by Scheie, Morse, and Aminlari, 1973) is misleading since 30 to 64 per cent of aphakic detachments occur in myopic eyes (Shapland, 1934; Schepens, 1951; Melbran and Dodds, 1964; Witmer, 1969; Ashrafzadeh, Schepens, Elzeneiny, Moura, Morse, and Kraushar, 1973) and if such eyes are excluded, the incidence of detachment is much lower. In our department the incidence of detachment after cataract extraction in emmetropic eyes during the period of the present study was 0·28 per cent (unpublished data).

Seven of the nine cases of retinal detachment in the present series occurred within 1 year of cataract extraction, five of them within 3 months. Five of the six detachments in myopic-aphakic eyes reported by Morax and Aron (1961) occurred within 3 months of cataract extraction and half of the myopic-aphakic detachments reported by Triester (1972) and by Witmer (1969) occurred within 1 year of cataract extraction. In other series in which the cases were not classified according to refraction, 38·4 to 46·5 per cent of aphakic detachments occurred in the first year after cataract extraction (Ashrafzadeh and others, 1973).

The average age of patients undergoing cataract

Table II  Clinical details of nine myopic eyes with retinal detachment

<table>
<thead>
<tr>
<th>Patient no.</th>
<th>Age at time of cataract extraction (years)</th>
<th>Sex</th>
<th>Refraction (phakic)</th>
<th>Vitreous loss</th>
<th>Hole causing detachment</th>
<th>Interval between cataract extraction and detachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>53</td>
<td>M</td>
<td>-17</td>
<td>+</td>
<td>Round large upper temporal</td>
<td>2 wks</td>
</tr>
<tr>
<td>2</td>
<td>61</td>
<td>F</td>
<td>-19</td>
<td>-</td>
<td>No holes</td>
<td>1 yr</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td>F</td>
<td>-17</td>
<td>+</td>
<td>Macular hole</td>
<td>4½ yrs*</td>
</tr>
<tr>
<td>4</td>
<td>58</td>
<td>F</td>
<td>-16</td>
<td>-</td>
<td>Round large upper temporal</td>
<td>1 wk</td>
</tr>
<tr>
<td>5</td>
<td>47</td>
<td>F</td>
<td>-12</td>
<td>-</td>
<td>Round + horseshoe large upper temporal</td>
<td>4 wks</td>
</tr>
<tr>
<td>6</td>
<td>62</td>
<td>M</td>
<td>-9</td>
<td>-</td>
<td>Horseshoe large upper temporal</td>
<td>1 yr</td>
</tr>
<tr>
<td>7</td>
<td>54</td>
<td>M</td>
<td>-8</td>
<td>-</td>
<td>Horseshoe large upper temporal</td>
<td>1½ yrs*</td>
</tr>
<tr>
<td>8</td>
<td>55</td>
<td>M</td>
<td>-6</td>
<td>-</td>
<td>Round small lower temporal</td>
<td>6 wks</td>
</tr>
<tr>
<td>9</td>
<td>58</td>
<td>M</td>
<td>-6</td>
<td>-</td>
<td>No holes</td>
<td>2 mths</td>
</tr>
</tbody>
</table>

*Trauma to eye  
**Bilateral cases

Table III  Incidence of retinal detachment in myopia-aphakia reported by various authors

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No. of eyes</th>
<th>No. of detachments</th>
<th>Per cent</th>
<th>Degree of myopia</th>
<th>Preventive treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barraquer</td>
<td>1958</td>
<td>156</td>
<td>2</td>
<td>1·3</td>
<td>All</td>
<td>Yes*</td>
</tr>
<tr>
<td>Morax and Aron</td>
<td>1961</td>
<td>92</td>
<td>6</td>
<td>6·5</td>
<td>High</td>
<td>No</td>
</tr>
<tr>
<td>Dienstbier</td>
<td>1962</td>
<td>96</td>
<td>6</td>
<td>6·2</td>
<td>High</td>
<td>No</td>
</tr>
<tr>
<td>Triester</td>
<td>1972</td>
<td>210</td>
<td>17</td>
<td>8·1</td>
<td>High</td>
<td>Yes*</td>
</tr>
<tr>
<td>Present series</td>
<td>1972</td>
<td>136</td>
<td>9</td>
<td>6·7</td>
<td>High</td>
<td>No</td>
</tr>
</tbody>
</table>

*See text
extraction in the present series was 63.2 years, and the average age of patients with aphakic detachments was 56.3 years: all the detachments were in patients who were under the age of 63 years. Pasino and Santori (1967) also found that the average age of patients operated on for senile cataract followed by retinal detachment was significantly lower than that of other patients with senile cataract.

The tendency for aphakic retinal detachment in eyes with high myopia to occur only a short time after cataract extraction, and to occur in relatively young patients, may be connected with the fact that posterior vitreous detachment (PVD) is less likely to be present at the time of lens extraction in young patients. In such cases PVD probably occurs soon after lens extraction (see page 483) and is probably a more sudden and dangerous process in aphakia because of the greater mobility of the vitreous in the absence of the lens.

It appears that myopic eyes which undergo cataract surgery before PVD has occurred, bear a special risk of developing retinal detachment, and it would seem reasonable to try to postpone cataract extraction in myopic eyes until vision in the better eye has dropped below a useful level.

Summary

Retinal detachment after cataract extraction occurred in nine out of 136 eyes with myopia of 6 or more dioptres (6.7 per cent), during a follow-up period of 1-49 years. Five of the nine detachments occurred within 3 months of cataract extraction. All patients with retinal detachment were under the age of 63 years.

Relatively young patients with high myopia bear a special risk of developing retinal detachment after lens extraction. The possible reason for this is discussed.

References


MELBRAN, E., and DODDS, R. (1964) Ophthalmologica (Basel), 147, 343.


SCHEPENS, C. L. (1951) Ibid., 45, 1.

